UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,817	10/12/2001	Masaharu Muramatsu	046124-5099	8262

9629 7590 04/01/2002

MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER
PIERRE, KENELT

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 04/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/974,817	Applicant(s) MURAMATSU, MASAHARU	
	Examiner KEN PIERRE	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1 to 9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This office action is in response to the application filed October 12, 2001.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5, 6 and 7, are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoru et al (09-304182 ; Japan) in view of Poole et al (5,134,274).

Regarding claims 1, 2, 5, 6 and 7, Satoru et al (09-304182; Japan) disclose (ABSTRACT) a device that detects two wavelengths by a single sensor 22a made by two different semiconductor material adjacent to each other (FIG4. on page 7) by correspondingly joining a light receiving element having high sensitivity to a wavelength in a visible light region, and a InGaAs light receiving element having high sensitivity to a wavelength in a near infrared region for integrally forming and using a CCD line sensor for at least one of them. (Claim 3) The first aforementioned photo detector is a grain color sorting machine according to claim 1 or 2 which comes to use for a light region the silicon photo diode which has high photographic sensitivity. (Claim 4) The second aforementioned photo detector is a grain color-sorting machine according to claim 1 or 2 which comes to use for the wavelength of a near-infrared

region InGaAs array sensor which has high photographic sensitivity.

However, Satoro et al do not use a two-sided illumination with two different adjacent semiconductor materials of the invention to receive the input light.

Poole et al (5,134,274) disclose (ABSTRACT) a two-sided imaging device silicon in one side and glass on the other side that allows for the elimination of optical elements necessary for combining the optical signals. (Col.3, line 39 to 54) Such a device offers distinct advantages over the use of conventional single-sided imaging devices, particularly in applications where it is necessary to combine images from two different optical paths. (Col.4, line 18 to 30) (FIG. 3) The device has a structure that includes a thinned silicon body 32, a glass substrate 34, an epoxy layer 36, a layer. (Col.4, line 40 to 50) (Col.5, line 30 to 36) (Claims 3 and 5) The device is constructed from a conventional one-sided imaging device, with silicon on the rear surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device of Satoru et al to utilize a two back-illuminated image pickup with the CCD facing the direction opposite direction of the incoming light to avoid gate attenuation of the incoming light to process multiple images as taught per Poole et at reference.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoru et al (09-304182; Japan) in view of Poole et al (5,134,274) and further in view of Tashiro et al (PUB No. US 2002/00117611).

Regarding claims 3 and 4, Poole et al disclose (ABSTRACT) a two-sided imaging device allows for the elimination of optical elements necessary for combining the optical signals. (Col.3, line 39 to 54) Such a device offers distinct advantages over the use of conventional single-sided imaging devices, particularly in applications where it is necessary to combine images from two different optical paths.

However, Poole et al do not disclose that the device has shift registers connected through bumps to image pick to process signal from image pick up.

Tashiro et al disclose (ABSTRACT) a large image pickup apparatus for, e.g., X rays that can provide a seamless image by using a plurality of single-crystal silicon image pickup elements. (Page 6, paragraph [0128]) (FIG. 22) The device uses bumps to connect to a TAB portion to be electrically connected to an external processing substrate 204 arranged at the back of image pickup elements arrayed like tiles. (Page 4, paragraph [0080]) The device has a shift register used to drive the pixel of an image pickup element will be explained. The shift register circuit is used to sequentially transfer pulse signals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have recognized the benefit of using bumps to electrically connect different surface and shift register to transfer signal as taught per Tashiro et al reference.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoru et al (09-304182; Japan) in view of Poole et al (5,134,274) and further in view of Miyashita et al (PUB No. US 2001/0028401).

Regarding claims 8 and 9, Poole et al disclose (ABSTRACT) a two sided imaging device allows for the elimination of optical elements necessary for combining the optical signals. (Col.3, line 39 to 54) Such a device offers distinct advantages over the use of conventional single-sided imaging devices, particularly in applications where it is necessary to combine images from two different optical paths.

However, Poole et al do not disclose that their device utilizes a thermoelectric cooler or a Peltier element to cool of the image pickup

Miyashita et al disclose (ABSTRACT) an image pickup control device that drives an image sensor including an output amplifier. (Page 1, paragraph [0011]) The image pickup has a Peltier device or thermoelectric cooler that forcibly cools off an image sensor to thereby reduce the temperature elevation of the image sensor and therefore noise to appear in images.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have recognized the benefit of using Peltier device or thermoelectric cooler in an image sensing device as taught per Miyashita et al reference.

This rejection is a complete treatment of the scope and the content of the prior art, the differences, and the level of skill in the art.

Conclusion

3. **THIS ACTION IS MADE NON-FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Ken Pierre whose telephone number is (703) 305-4002. The examiner can normally be reach on Monday-Friday from 8:30AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Carl Whitehead, Jr. can be reach at (703) 308-4940. The fax telephone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or processing should be directed to the receptionist whose telephone number is (703) 308-0956.

KP

March 12, 2002

CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800